

WHAT IS CLAIMED IS:

1. A multi-channel recording head the physical resolution of which is lower than the resolution of an image to be recorded, comprising:

a plurality of recording channels arranged in one direction; and

spare channels arranged away from said recording channels by an integral multiple of the channel pitch of said recording channels on the extension of an array of said recording channels, said spare channels being arranged as least as many as the number of said recording channels, and each spare channel having the same physical resolution as the resolution of said image to be recorded.

2. The recording head according to claim 1, wherein said resolution of said image to be recorded is the dot resolution of said image to be recorded.

3. The recording head according to claim 1, wherein said spare channels are arranged on both ends of the array of said recording channels.

4. An image recording method of recording an image

by using a recording head the physical resolution of which is lower than the resolution of the image to be recorded, said recording head comprising: a plurality of recording channels arranged in one direction; and spare channels arranged away from said recording channels by an integral multiple of the channel pitch of said recording channels on the extension of an array of said recording channels, said spare channels being arranged as least as many as the number of said recording channels, and each spare channel having the same physical resolution as the resolution of said image to be recorded,

said image recording method comprising:

rotating a drum with a recording medium wrapped around the periphery of the drum;

moving said recording head in a direction of an axis of the drum while aligning a direction of the array of said recording channels of said recording head with the direction of the axis of the drum; and

modulating each recording channel of said recording head in accordance with said image to be recorded, thereby performing image recording at a higher resolution than said physical resolution of said recording head,

when a faulty channel exists among said recording channels, said image recording method further comprising:

previously determining a spare channel corresponding to the faulty channel among said recording channels;

assigning recording data on said fault channel to the corresponding spare channel in the image recording; and

modulating said corresponding spare channel with said assigned recording data in accordance with the number of rotations of said corresponding spare channel behind said faulty channel in the image recording.

5. The image recording method according to claim 4, wherein said resolution of said image to be recorded is the dot resolution of said image to be recorded.

6. The image recording method according to claim 4, wherein said spare channels are arranged on both ends of the array of said recording channels.

7. The image recording method according to claim 4, wherein the ratio of travel amount of the recording head per rotation of said drum to the channel pitch of said recording channel is assumed as p , the ratio of the recording resolution to the physical resolution of said recording head as N , the number of recording channels of said recording head as M , and an arbitrary integer as X , N

and M being integers and the following expressions (1) and (2) are satisfied:

$$p \cdot N = M \quad \text{Expression (1)}$$

$$p = X + 1/N \quad \text{Expression (2)}$$

8. An image recording apparatus, comprising:

a recording head the physical resolution of which is lower than the resolution of the image to be recorded, said recording head comprising: a plurality of recording channels arranged in one direction; and spare channels arranged away from said recording channels by an integral multiple of the channel pitch of said recording channels on the extension of an array of said recording channels, said spare channels being arranged as least as many as the number of said recording channels, and each spare channel having the same physical resolution as the resolution of said image to be recorded;

a drum rotating with a recording medium wrapped around the periphery of the drum;

moving means for moving said recording head in the direction of the axis while aligning the direction of the array of the recording channels of said recording head with the direction of the axis of the drum;

determining means for acquiring the information on a

faulty channel of said recording head and determining a spare channel corresponding to the faulty channel; and modulating means for modulating each recording channel of said recording head in accordance with the rotation of said drum and travel of said recording head, and when the faulty channel exists among said recording channels, assigning the recording data on said fault channel to the corresponding spare channel, and modulating said spare channel with said assigned recording data in accordance with the number of rotations of the spare channel behind the faulty channel, thereby performing image recording at a higher resolution than the physical resolution of said recording channel.

9. The image recording apparatus according to claim 8, wherein said resolution of said image to be recorded is the dot resolution of said image to be recorded.

10. The image recording apparatus according to claim 8, wherein said spare channels are arranged on both ends of the array of said recording channels.

11. The image recording apparatus according to claim 8, wherein the ratio of travel amount of the recording head

per rotation of said drum to the channel pitch of said recording channel is assumed as p , the ratio of the recording resolution to the physical resolution of said recording head as N , the number of recording channels of said recording head as M , and an arbitrary integer as X , N and M being integers and the following expressions (1) and (2) are satisfied:

$$p \cdot N = M \quad \text{Expression (1)}$$

$$p = X + 1/N \quad \text{Expression (2)}$$